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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,990	09/11/2003	Atsuo Omaru	09792909-5670	9329

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EXAMINER	
PARSONS, THOMAS H	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 07/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/661,990	OMARU, ATSUO	
	Examiner	Art Unit	
	Thomas H. Parsons	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 6-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4, 6-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment

This is in response to the Amendment filed 2 May 2006.

(*Previous*) DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The rejections of claims 1-6 and 8 under 35 U.S.C. 102(e) as being anticipated by Sudano et al. (6,933,077) have been **withdrawn** in view of Applicant's Amendment.

Claim Rejections - 35 USC § 103

2. The rejections of claim 7 under 35 U.S.C. 103(a) as being unpatentable over Sudano et al. as applied to claim 1 above, and further in view of Kimijima et al. (6,682,853) has been **withdrawn** in view of Applicant's Amendment.

Claim Rejections - 35 USC § 102

3. The rejections of claims 1-8 under 35 U.S.C. 102(b) as being anticipated by JP9-120818 have been **withdrawn** in view of Applicant's Amendment.

Response to Arguments

4. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

(New) DETAILED ACTION

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-4 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudano et al. (6,993,077) in view of MatWeb "Overview - Polycarbonate, Molded" or "Overview - Polypropylene, Molded".

Claim 1: Sudano et al. in Figures 2-4 disclose a battery (col. 1: 8-10) comprising an anode, including an anode substrate and a layer of an anode active material (76), formed on the anode substrate, a cathode, including a cathode substrate and a layer of a cathode active material (72), formed on the cathode substrate, and an electrolyte (74), containing an electrolyte salt, wherein

the anode substrate and/or the cathode substrate include a resin layer containing a polymer (44) and a metal layer (44) containing electrically conductive metal. See abstract, col. 1: 22-25, col. 1: 40-col. 2: 22, col. 2: 58-64.

The transitional phrase "comprising" has been construed as open-ended language and does not exclude additional, unrecited elements such as the *protective metallic coating* of Sudano et al. (col. 2: 64-67).

Sudano et al. disclose that the polymer can comprise polycarbonate or polypropylene (which are that same as those instantly disclosed) but is silent as to the polymer having a true specific gravity of not less than 0.9 g/cc and not larger than 1.9 g/cc.

MatWeb in "Overview - Polycarbonate, Molded" discloses a polycarbonate polymer having a true specific gravity (density) of between 1.17 and 1.45 g/cc, and in Overview - polypropylene, Molded" discloses a polypropylene having a true specific gravity (density) of between 0.9 and 1.24 g/cc.

Note: The Examiner has construed density as having the same meaning as true specific gravity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the polymers of Sudano et al. by incorporating the polymers of MatWeb because MatWeb teaches known polymers having a true specific gravity of not less than 0.9 g/cc and not larger than 1.9 g/cc that would have offered a wide range of outstanding physical, mechanical, and thermal properties thereby improving the overall life, performance and mechanical integrity of the battery.

Claim 2: Sudano et al. disclose that the resin layer includes one or more of an olefinic resin, a sulfur-containing resin, a nitrogen-containing resin and a fluorine-containing resin, as polymer (e.g. polystyrene, polyethylene, polycarbonate, polypropylene and polypropylene sulphide which as the same as those instantly disclosed)(col. 3: 3-8).

Claim 3: Because the resin layer of Sudano et al. is structurally the same as that instantly disclosed, it inherently would include one or more through-hole(s) extending from one major surface to the opposite major surface thereof.

Claim 4: Sudano et al. on col. 3: 44-50 disclose a metal layer formed on each of the major surfaces of the resin layer by a thin film forming technique so that the metal layers are electrically contacted with each other. Further, because the metal layers of Sudano et al. are formed on the resin layer by the same technique as instantly disclosed (i.e. vapor deposition), the metal layers would inherently be electrically contacted with each other.

Claim 6: Sudano et al. disclose that the polymer can comprise polycarbonate or polypropylene (which are that same as those instantly disclosed) but is silent as to the polymer having a thermal conductivity not less than 3×10^{-4} cal/cm^2·sec·(K·cm^{-1})$^{-1}$.

MatWeb in "Overview - Polycarbonate, Molded" discloses a polycarbonate polymer having a thermal conductivity of between 4.5×10^{-4} and 5×10^{-4} (MatWeb specifically discloses 0.1 – 0.13 W/m-K), and in Overview - polypropylene, Molded" discloses a polypropylene having a thermal conductivity of 3.1×10^{-4} (MatWeb specifically discloses an upper limit of 0.21 W/m-K).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the polymers of Sudano et al. by incorporating the polymers of MatWeb because MatWeb teaches known polymers having a thermal conductivity not less than 3×10^{-4} cal/cm^2·sec·(K·cm^{-1})$^{-1}$ that would have offered a wide range of outstanding physical, mechanical, and thermal properties thereby improving the overall life, performance and mechanical integrity of the battery.

Claim 8: Sudano et al. disclose in Figure 4 a battery comprising an anode which is band-shaped, and a cathode which is also band-shaped, the anode and the cathode being coiled longitudinally with a separator in-between (col. 6: 48-61).

Claim 9: Sudano et al. disclose that the metal layer includes one or more of copper, nickel, and aluminum, as the electrically conductive metal (col. 3: 16-20).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sudano et al. in view of MatWeb as applied to claim 1 above, and further in view of Kimijima et al. (6,682,853).

Sudano et al. and MatWeb are as applied, argued, and disclosed above, and incorporated herein.

Claim 7: The Sudano et al. combination does not disclose anode containing a carbonaceous material as the anode active material and a cathode containing one or more of transition metal oxides represented by the general formula M_xO_y, where M is one or more of transition metals, with $x \geq 1$ and $y \geq 1$, and lithium complex oxides represented by the general formula $Li_xM_yO_z$, where M is one or more of Co, Ni, Mn, Fe, Al, V and Ti, with $x \geq 1$, $y \geq 1$ and $z \geq 2$.

Kimjima et al. on col. 4: 45-col. 5: 15 disclose an anode containing a carbonaceous material as the anode active material and a cathode containing one or more of transition metal oxides represented by the general formula M_xO_y, where M is one or more of transition metals, with $x \geq 1$ and $y \geq 1$, and lithium complex oxides represented by the general formula $Li_xM_yO_z$,

where M is one or more of Co, Ni, Mn, Fe, Al, V and Ti, with $x \geq 1$, $y \geq 1$ and $z \geq 2$. More particularly, Kimijima et al. disclose the same material as those instantly disclosed.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the material of the Sudano et al. combination by incorporating the material of Kimijima et al. because Kimijima et al. disclose anode and cathode materials that would have been capable of generating high voltage and excellent characteristic energy density thereby improving the overall performance of the battery.

9. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP9-120818 in view of MatWeb "Overview - Polypropylene, Molded".

Claim 1: JP9-120818 in Figure 1 discloses battery comprising an anode, including an anode substrate and a layer of an anode active material, formed on the anode substrate, a cathode, including a cathode substrate and a layer of a cathode active material, formed on the cathode substrate, and an electrolyte (74), containing an electrolyte salt, wherein

the anode substrate and/or the cathode substrate include a resin layer containing a polymer and a metal layer containing electrically conductive metal. See abstract and paragraphs [0011]-[0066].

JP9-120818 discloses that the polymer can comprise polypropylene (which are that same as those instantly disclosed) but is silent as to the polymer having a true specific gravity of not less than 0.9 g/cc and not larger than 1.9 g/cc.

MatWeb in "Overview - polypropylene, Molded" discloses a polypropylene having a true specific gravity (density) of between 0.9 and 1.24 g/cc.

Note: The Examiner has construed density as having the same meaning as true specific gravity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the polymer of JP9-120818 by incorporating the polymers of MatWeb because MatWeb teaches known polymers having a true specific gravity of not less than 0.9 g/cc and not larger than 1.9 g/cc that would have offered a wide range of outstanding physical, mechanical, and thermal properties thereby improving the overall life, performance and mechanical integrity of the battery.

Claim 2: JP9-120818 discloses that the resin layer includes one or more of an olefinic resin, a sulfur-containing resin, a nitrogen-containing resin and a fluorine-containing resin, as the polymer (e.g. polyester, polyimide and polypropylene which are the same as those instantly disclosed)(paragraph [0079].

Claim 3: Because the resin layer of JP9-120818 is structurally the same as that instantly disclosed, it inherently would include one or more through-hole(s) extending from one major surface to the opposite major surface thereof.

Claim 4: JP9-120818 discloses that the metal layer is formed on each of said major surfaces of the resin layer by a thin film forming technique so that the metal layers are electrically contacted with each other. Further, because the metal layers of JP9-120818 are formed on the resin layer by the same technique as instantly disclosed (i.e. vapor deposition), the metal layers would inherently be electrically contacted with each other.

Claim 6: JP9-120818 discloses that the polymer can comprise polypropylene (which are that same as those instantly disclosed) but is silent as to the polymer having a thermal conductivity not less than 3×10^{-4} cal/cm^2·sec·(K·cm^{-1})$^{-1}$.

MatWeb in Overview - polypropylene, Molded" discloses polypropylene polymers having a thermal conductivity of 3.1×10^{-4} (MatWeb specifically discloses an upper limit of 0.21 W/m-K).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the polymer of JP9-120818 by incorporating the polymers of MatWeb because MatWeb teaches known polymers having a thermal conductivity not less than 3×10^{-4} cal/cm^2·sec·(K·cm^{-1})$^{-1}$ that would have offered a wide range of outstanding physical, mechanical, and thermal properties thereby improving the overall life, performance and mechanical integrity of the battery.

Claim 7: JP9-120818 discloses that anode contains a carbonaceous material as the anode active material (paragraph [0024]) and wherein the cathode contains one or more of transition metal oxides represented by the general formula M_xO_y, where M is one or more of transition metals, with $x \geq 1$ and $y \geq 1$, and lithium complex oxides represented by the general formula $Li_xM_yO_z$, where M is one or more of Co, Ni, Mn, Fe, Al, V and Ti, with $x \geq 1$, $y \geq 1$ and $z \geq 2$ (paragraph [0083] which discloses the same materials s those instantly disclosed).

Claim 8: JP9-120818 in Figure 2 discloses a battery comprising a band-shaped anode (1), and a band-shaped cathode (2), the anode and the cathode being coiled longitudinally with a separator (3) in-between.

Claim 9: JP9-120818 discloses that the metal layer includes one or more of copper, nickel, and aluminum, as the electrically conductive metal (paragraph [0080].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H. Parsons whose telephone number is (571) 272-1290. The examiner can normally be reached on M-F (7:00-4:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thomas H Parsons
Examiner
Art Unit 1745

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PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER